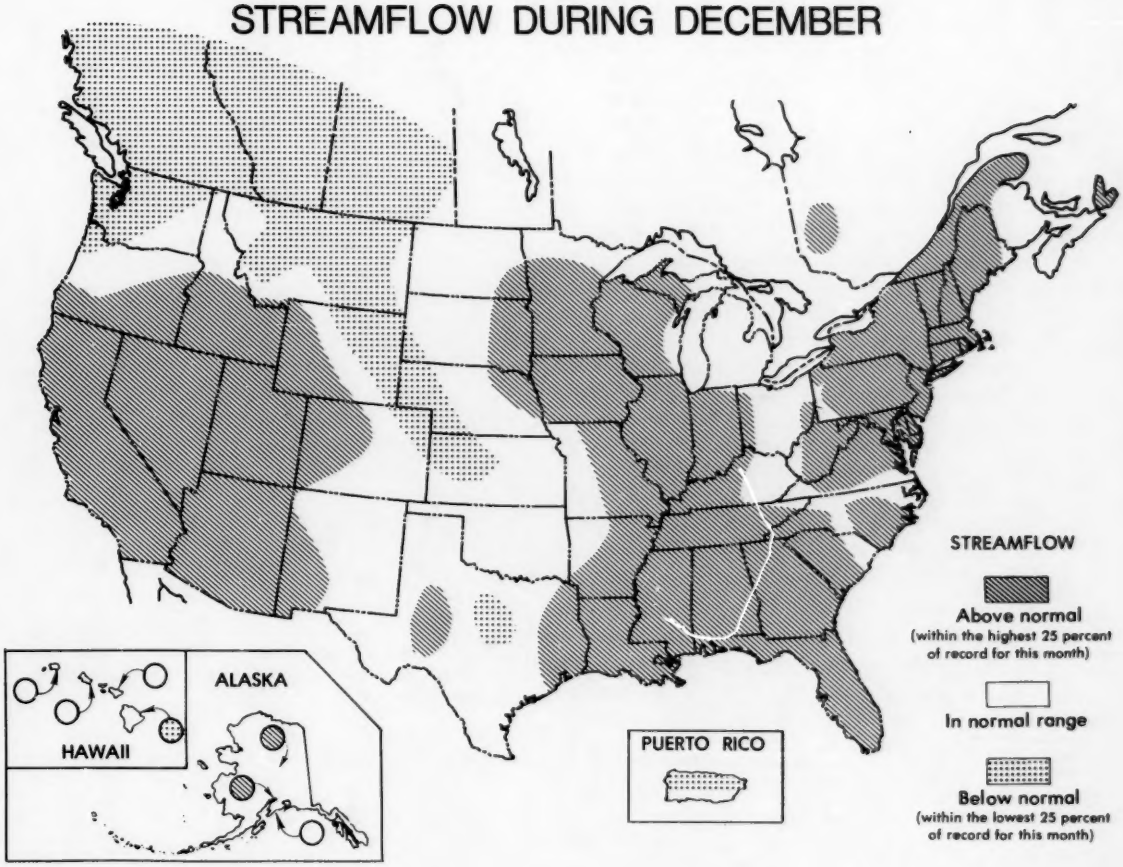
National Water Conditions

UNITED STATES
Department of the Interior
Geological Survey

CANADA
Department of the Environment
Water Resources Branch

DECEMBER 1983

STREAMFLOW DURING DECEMBER



Streamflow was in the normal or above-normal range in most of the United States and south-central and southeastern Canada during December. Below-normal streamflow prevailed in southwestern Canada, Hawaii, Washington, Montana, northwestern Oregon, and in parts of Wyoming, South Dakota, Colorado, Nebraska, Kansas, Texas, and Puerto Rico.

Moderate to severe flooding occurred in Alabama, Georgia, and Mississippi in early December, following heavy rains.

Contents of reservoirs continued near or above average at most index sites in the Nation during December, but remained below average in Nova Scotia, Canada.

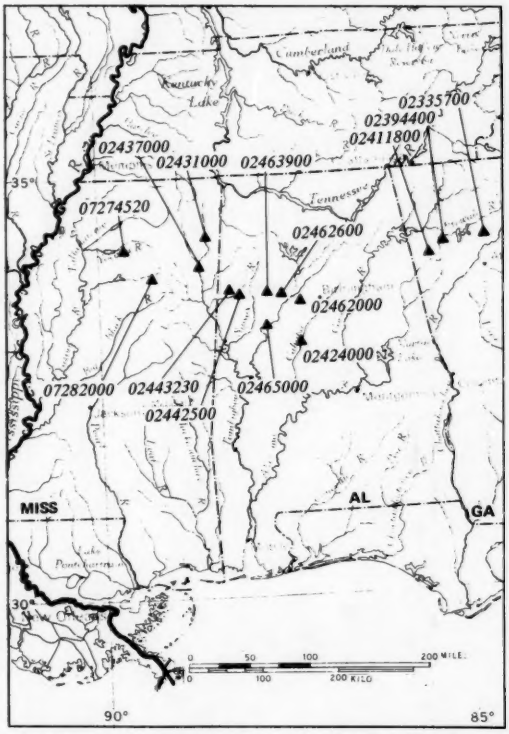
STREAMFLOW CONDITIONS DURING DECEMBER 1983

Streamflow generally increased in the eastern part of the Nation, the lower Mississippi-valley States, and also in Arizona, Nevada, and parts of New Mexico and Texas. Monthly mean flows generally decreased in the northern part of the United States and southern Canada west to the Great Lakes, as well as in Alaska, Colorado, Hawaii, Utah, and Oklahoma. Flows were variable in southeastern Canada, Nebraska, California, and New Mexico.

Monthly mean flows were above the normal range in most of the eastern half of the Nation, in the western and southwestern States where flows had been above the normal range for the previous three to ten consecutive months, and in parts of Alaska and Texas. Monthly and/or daily mean flows were highest of record for December in parts of Alabama, Alaska, California, Colorado, Idaho, Louisiana, Nevada, New York, Utah, Vermont, and Quebec. (See table on page 4.) For example, the monthly mean flow of 7,110 cubic feet per second (cfs) at Cahaba River at Centreville, Alabama (drainage area, 1,029 square miles), was the highest for December in 56 years of record, and remained above the long-term median for the 11th consecutive month.

Record-low December temperatures, well below freezing, in the north-central region of the United States prevented the slightly above-average precipitation (snowfalls) from contributing to streamflow. As a result, monthly mean flows at a number of gaging stations were below the normal range. Also, flows were below the normal range in southwestern Canada, Hawaii, Washington, northwestern Oregon, and parts of Kansas, Puerto Rico, and Texas. Record low flows were reported in parts of Kansas and Montana. (See table on page 4.)

Moderate to severe flooding occurred in Alabama, Georgia, and Mississippi in early December 1983. Heavy rains of as much as 8 to 11 inches fell in 24 hours, and runoff from the heavy rains resulted in peak flows with recurrence intervals that ranged from 10 to 100 years. Peak discharges were highest of record at five gaging stations in Alabama. Gaging station locations are shown on the map below, and preliminary data on flood stages,



Locations of stream gaging stations in Alabama, Georgia, and Mississippi, described in table of peak stages and discharges on page 3.

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Provisional data; subject to revision

FLOOD DATA FOR SELECTED SITES IN GEORGIA, ALABAMA, AND MISSISSIPPI, DECEMBER 1983

WRD station number	Stream and place of determination	Drainage area (square miles)	Period of known floods	Maximum flood previously known			Maximum during present flood				
				Date	Stage (feet)	Discharge (cfs)	Date	Stage (feet)	Discharge		Recurrence interval (years)
									Cfs	Cfs per square mile	
	GEORGIA										
	APALACHICOLA RIVER BASIN										
02335700	Big Creek near Alpharetta.	72	1960–	Feb. 3, 1982	13.05	6,100	Dec. 6	12.30	4,850	67	10
	MOBILE RIVER BASIN										
02394400	Pumpkinvine Creek below Dallas.	42.8	1951–77, 1982–	Feb. 23, 1961	20.28	6,800	6	19.3	5,900	138	20
02411800	Little River near Buchanan.	20.2	1959–	Mar. 14, 1966	12.58	3,820	6	11.2	3,200	158	10
	ALABAMA										
	MOBILE RIVER BASIN										
02424000	Cahaba River at Centreville.	1,029	1901–08, 1929–32, 1935–	Mar. 29, 1951	(1)	83,600	Dec. 4	28.53	39,000	38	25
02442500	Luxapalla Creek at Milliport.	241	1954–69, 1980–	Jan. 5, 1982	13.24	10,500	3	13.74	13,000	54	50
02443230	Mud Creek near Fernbank.	35.8	1971–	Apr. 3, 1979	34.91	5,340	3	36.35	9,000	251	50
02462000	Valley Creek near Oak Grove.	145	1953–	Apr. 13, 1979	29.80	26,300	3	34.1	32,000	221	100
02462600	Blue Creek near Oakman .	5.32	1959–65, 1976–	Feb. 21, 1961	7.16	3,820	3	7.04	3,530	664	100
02463900	Bear Creek near Samantha.	15.05	1976–	Apr. 12, 1979	23.24	8,360	3	23.95	9,300	618	(2)
02465000	Black Warrior River at Northport.	4,828	1894–1902, 1928–	Apr. 13, 1979	(3)	272,000	3	62.76	237,000	49	50
	MISSISSIPPI										
	MOBILE RIVER BASIN										
02431000	Tombigbee River near Fulton.	612	1928–	Mar. 22, 1955	25.75	82,200	Dec. 4	22.77	37,000	60	10
02437000	Tombigbee River near Amory.	1,928	1937–	Mar. 17, 1973	34.65	162,000	5	31.00	73,400	38	10
	YAZOO RIVER BASIN										
07274250	Otoucalofa Creek at Water Valley.	84.1	1952–	Mar. 15, 1973	26.84	10,400	3	27.12	13,200	157	50
07282000	Yalobusha River at Calhoun City.	305	1950–	Mar. 16, 1973	25.72	52,100	3	34.98	29,000	95	10

[1] Maximum gage height, 36.63 feet on Apr. 8, 1938.
[2] Recurrence interval not determined.
[3] Maximum gage height, 67.7 feet on Apr. 18, 1900.

NEW EXTREMES DURING DECEMBER 1983 AT STREAMFLOW INDEX STATIONS

Station number	Stream and place of determination	Drainage area (square miles)	Years of record	Previous December extremes (period of record)		December 1983			
				Monthly mean in cfs (year)	Daily mean in cfs (year)	Monthly mean in cfs	Percent of median	Daily mean in cfs	Day
	HIGH FLOWS								
01318500	Hudson River at Hadley, New York.	1,664	62	6,268 (1927)	28,200 (1948)	7,020	283	20,800	15
01357500	Mohawk River at Cohoes, New York.	3,456	65	13,630 (1973)	54,900 (1973)	12,200	234	56,500	14
02424000	Cahaba River at Centreville, Alabama.	1,029	56	7,026 (1961)	66,300 (1942)	7,110	687	39,000	4
030203	St. Francois River at Hemmings Falls, Quebec, Canada.	3,710	57	13,400 (1956)	45,100 (1956)	18,900	376	.....	...
04262500	West Branch Oswegatchie River near Harrisville, New York.	258	67	1,244 (1927)	3,980 (1957)	1,650	283	6,090	15
04287000	Dog River at Northfield Falls, Vermont.	76.1	49	311 (1973)	2,880 (1948)	360	343	1,910	14
07352000	Saline Bayou near Lucky, Louisiana.	154	43	1,200 (1982)	7,210 (1982)	571	625	7,570	12
09180500	Colorado River near Cisco, Utah.	24,100	72	5,155 (1970)	7,400 (1966)	5,699	182	6,290	4
09239500	Yampa River at Steamboat Springs, Colorado.	604	76	161 (1937)	221 (1937)	172	178	187	17
09315000	Green River at Green River, Utah.	40,600	84	5,305 (1982)	6,700 (1964)	5,899	246	6,400	29
10234500	Beaver River near Beaver, Utah . . .	91.0	69	27.7 (1941)	103 (1966)	30.1	185	35.0	1
10322500	Humboldt River at Palisade, Nevada.	5,010	76	319 (1982)	675 (1964)	680	791	1,150	16
11425500	Sacramento River at Verona, California.	21,257	54	57,250 (1973)	73,800 (1964)	64,335	310	78,000	28
13037500	Snake River near Heise, Idaho. . . .	5,752	73	4,890 (1917)	....	5,060	157	.....	...
15515500	Tanana River at Nenana, Alaska. . .	25,600	21	8,187 (1975)	9,200 (1975)	11,129	165	12,000	1
	LOW FLOWS								
06867000	Saline River near Russell, Kansas.	1,502	32	3.71 (1978)	0.73 (1966)	1.9	8	1.8	24
12354500	Clark Fork at St. Regis, Montana . .	10,709	73	1,909 (1937)	1,100 (1932)	1,870	58	.....	...

peak discharges, and recurrence intervals are given in the table on page 3

In northern Utah, heavy precipitation fell during the month, especially during the last week of December, and, as a result, the water level in the Great Salt Lake on December 30, 1983, was at an elevation of 4,206.15 feet, the highest since 1887. That elevation was 4.50 feet higher than a year ago and 0.85 foot higher than last month.

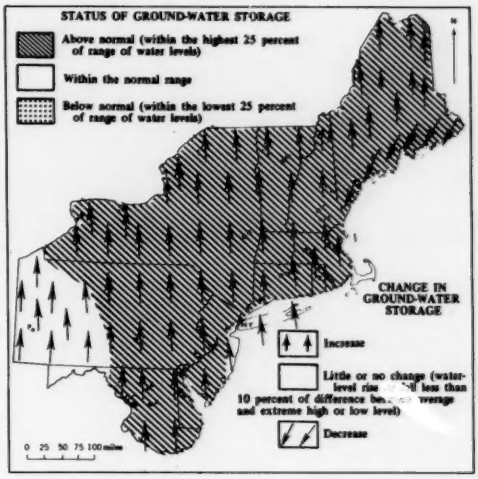
Contents of reservoirs remained near or above average at most index sites in the Nation during December. By the end of the month, contents of reservoirs in the Northeast had increased significantly and were above average. The New York City reservoir system increased from 50 to 70 percent of normal maximum capacity during the month. However, contents of reservoirs in Nova Scotia, Canada, remained below average. Contents of reservoirs in the High Plains decreased but generally remained near or above average. Contents of reservoirs in the Pacific Northwest decreased, reflecting the low flows during December, but nevertheless were generally above long-term averages.

The Nation's above-normal trend in streamflow was reflected in the combined flow of its three largest rivers—Mississippi, St. Lawrence, and Columbia—which averaged 1,341,000 cfs during December, up 64 percent from last month and 63 percent above average for December. These three river systems drain more than half of the conterminous United States, and provide a quick, useful check on the status of the Nation's surface-water resources.

GROUND-WATER CONDITIONS DURING DECEMBER 1983

Ground-water levels continued to rise in nearly the entire region as aquifers were replenished by recharge from above-normal precipitation. (See map.) In coastal areas of Maine, levels declined from the unusually high levels that were reached near the end of November. Above-average levels persisted in New England. Levels were also above average for December in wells in many other parts of the region. Levels near end of December in some observation wells in New England and New York were at or near the highest recorded levels for that time of year in the past 25-45 years.

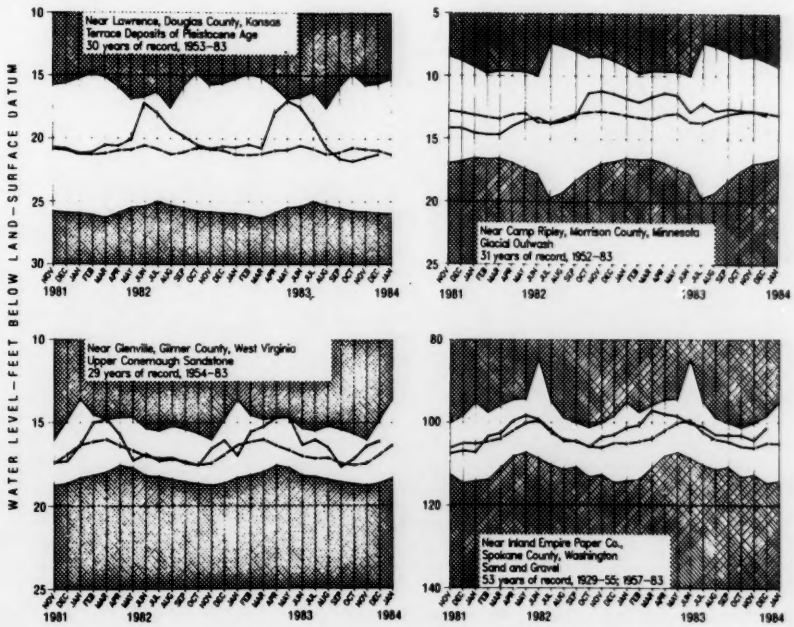
In the southeastern States, ground-water levels rose in North Carolina, and in most of West Virginia, Mississippi, and Georgia. Trends were mixed in other southeastern States. Water levels were above average in Kentucky, below average in Arkansas, and mixed with respect to average in other reporting States. A new low ground-water level for December was recorded in Louisiana.



Map shows ground-water storage near end of December and change in ground-water storage from end of November to end of December.

MONTH-END GROUND-WATER LEVELS IN KEY WELLS

Unshaded area indicates range between highest and lowest record for the month. Dashed line indicates average of monthly levels in previous years. Heavy line indicates level for current period.



WATER LEVELS IN KEY OBSERVATION WELLS IN SOME REPRESENTATIVE AQUIFERS IN THE CONTERMINOUS UNITED STATES—DECEMBER 1983

Aquifer and location	Current water level in feet below land-surface datum	Departure from average in feet	Net change in water level in feet since:		Year records began	Remarks
			Last month	Last year		
Glacial drift at Hanska, south-central Minnesota	-10.12	-1.72	+1.43	-5.02	1943	
Glacial drift at Roscommon in north-central part of Lower Peninsula, Michigan	-4.13	+0.74	-0.23	-0.35	1935	
Glacial drift at Marion, Iowa	-2.61	+3.90	+1.33	-.05	1941	
Glacial drift at Princeton in northwestern Illinois	-6.50	+7.41	+1.90	-0.08	1943	
Petersburg Granite, southeastern Piedmont near Fall Zone, Colonial Heights, Virginia	-16.54	-0.62	+0.62	+0.08	1939	
Glacial outwash sand and gravel, Louisville, Kentucky (U.S. well no. 2)	-17.86	+8.15	-0.15	+1.04	1946	
500-foot sand aquifer near Memphis, Tennessee (U.S. well no. 2)	-103.63	-15.13	-0.05	-0.70	1941	
Granite in eastern Piedmont Province, Chapel Hill, North Carolina	-41.87	+1.76	+0.55	+0.35	1931	
Sparta Sand in El Dorado industrial area Union County, Arkansas	-331.36	-5.47	-2.15	+0.14	1935	
Eutaw Formation in the City of Montgomery, Alabama (U.S. well no. 4)	-17.4	+4.3	+1.3	+3.4	1952	
Limestone aquifer on Cockspur Island, Savannah area, Georgia (U.S. well no. 6)	-31.90	-5.77	+0.84	+0.70	1956	
Sand and gravel in Puget Trough, Tacoma, Washington	-101.18	+9.67	+0.75	+2.83	1952	
Pleistocene glacial outwash gravel, North Pole, northern Idaho (U.S. well no. 3)	-456.3	+5.3	-0.7	+2.2	1929	
Snake River Group: southwestern Snake River Plain aquifer, at Eden, Idaho	-122.7	-5.8	-1.4	+1.9	1957	
Flood plain alluvium at Hamilton Fairgrounds, Hamilton, Montana	-13.82	-0.20	-1.18	+0.04	1970	
Alluvial sand and gravel, Platte River Valley, Ashland, Nebraska (U.S. well no. 6)	-5.54	+0.70	+0.02	-1.69	1935	
Alluvial valley fill in Steptoe Valley, Nevada (U.S. well no. 3)	-9.93	.....	+0.20	+0.63	1950	December high.
Pleistocene terrace deposits in Kansas River valley, at Lawrence, northeastern Kansas	-21.22	-0.25	+0.28	-0.61	1953	
Alluvium and Paso Robles, clay, sand, and gravel, Santa Maria Valley, California	-110.38	+31.69	+4.82	+26.44	1957	December high.
Valley fill, Elfrida area, Douglas, Arizona (U.S. well no. 15)	-108.6	-30.79	+0.6	+2.9	1951	
Berrendo-Smith well in San Andres Limestone, Roswell artesian basin of Pecos Valley, New Mexico (U.S. well no. 1-A)	-57.23	+0.25	+1.51	+0.15	1966	
Hueco bolson, El Paso area, Texas	-260.73	-16.37	-0.67	-1.04	1965	December low.
Evangeline aquifer, Houston area, Texas	-307.35	-6.87	+4.00	+25.67	1965	

In the central and western Great Lakes States, ground-water levels rose in Indiana; trends were mixed in other States. Water levels were above average in Michigan, mostly above average in Iowa, and mostly below average in Minnesota.

In the western States, ground-water levels rose in Nebraska, Nevada, and Kansas, and declined in North Dakota. Trends were mixed in other States. Water levels were above long-term averages in Washington, Nebraska, and southern California, and below average in Kansas and Arizona. Levels were both above and below average in other western States. A new alltime low ground-water level was reached in Arizona, in 21 years of record. New high levels for December occurred in Idaho, southern California, and Nevada, and new low levels for December were recorded in Nevada and in western Texas.

USABLE CONTENTS OF SELECTED RESERVOIRS NEAR END OF DECEMBER 1983

[Contents are expressed in percent of reservoir capacity. The usable storage capacity of each reservoir is shown in the column headed "Normal maximum."]

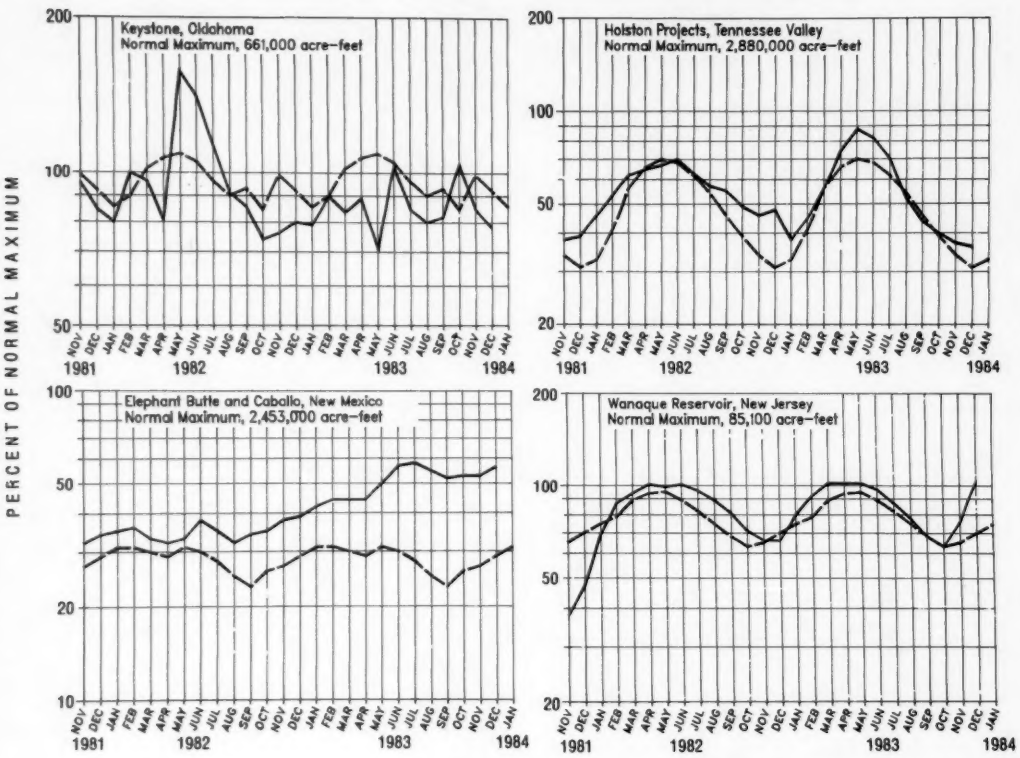
Reservoir Principal uses: F–Flood control I–Irrigation M–Municipal P–Power R–Recreation W–Industrial	Percent of normal maximum				Normal maximum (acre-feet)[a]
	End of Dec. 1983	End of Dec. 1982	Average for end of Dec.	End of Nov. 1983	
NOVA SCOTIA					
Rossignol, Mulgrave, Falls Lake, St. Margaret's Bay, Black, and Ponhook Reservoirs (P)	38	33	50	30	[b]226,300
QUEBEC					
Allard (P)	56	94	58	56	280,600
Gouin (P)	70	57	65	73	6,954,000
MAINE					
Seven reservoir systems (MP)	78	57	57	62	4,098,000
NEW HAMPSHIRE					
First Connecticut Lake (P)	65	54	58	61	76,450
Lake Francis (FPR)	82	95	70	72	99,310
Lake Winnipesaukee (PR)	88	61	61	91	165,700
VERMONT					
Harriman (P)	87	67	59	66	116,200
Somerset (P)	86	71	67	51	57,390
MASSACHUSETTS					
Cobble Mountain and Borden Brook (MP)	78	71	72	69	77,920
NEW YORK					
Great Sacandaga Lake (FPR)	56	48	52	52	786,700
Indian Lake (FMP)	84	66	61	77	103,300
New York City reservoir system (MW)	70	53	...	50	1,680,000
NEW JERSEY					
Wanaque (M)	101	66	70	76	85,100
PENNSYLVANIA					
Allegheny (FPR)	55	71	33	35	1,180,000
Pymatuning (FMR)	81	93	81	92	188,000
Raystown Lake (FR)	68	67	52	67	761,900
Lake Wallenpaupack (PR)	79	68	56	70	157,800
MARYLAND					
Baltimore municipal system (M)	95	64	84	86	261,900
NORTH CAROLINA					
Bridgewater (Lake James) (P)	96	93	76	94	288,800
Narrows (Badin Lake) (P)	97	85	93	95	128,900
High Rock Lake (P)	71	56	61	56	234,800
SOUTH CAROLINA					
Lake Murray (P)	80	86	60	76	1,614,000
Lakes Marion and Moultrie (P)	87	73	60	77	1,862,000
SOUTH CAROLINA–GEORGIA					
Clark Hill (FP)	83	67	52	57	1,730,000
GEORGIA					
Burton (PR)	78	86	52	86	104,000
Sinclair (MPR)	97	95	73	100	214,000
Lake Sidney Lanier (FMPR)	64	63	50	50	1,686,000
ALABAMA					
Lake Martin (P)	95	81	59	87	1,375,000
TENNESSEE VALLEY					
Clinch Projects: Norris and Melton Hill Lakes (FPR)	32	39	31	30	2,229,300
Douglas Lake (FPR)	17	22	10	23	1,394,000
Hiwassee Projects: Chatuge, Nottely, Hiwassee, Apalachia, Blue Ridge, Ocoee 3, and Parksville Lakes (FPR)	54	52	37	52	1,012,000
Holston Projects: South Holston, Watauga, Boone, Fort Patrick Henry, and Cherokee Lakes (FPR)	36	48	32	37	2,880,000
Little Tennessee Projects: Nantahala, Thorpe, Fontana, and Chilhowee Lakes (FPR)	51	54	38	43	1,478,000
WISCONSIN					
Chippewa and Flambeau (PR)	78	79	62	89	365,000
Wisconsin River (21 reservoirs) (PR)	80	85	53	90	399,000
MINNESOTA					
Mississippi River headwater system (FMR)	26	26	23	20	1,640,000
NORTH DAKOTA					
Lake Sakakawea (Garrison) (FIPR)	87	88	85	89	22,700,000
SOUTH DAKOTA					
Angostura (I)	75	88	72	74	127,600
Belle Fourche (I)	52	85	44	46	185,200
Lake Francis Case (FIP)	61	55	56	52	4,834,000
Lake Oahe (FIP)	82	85	...	85	22,530,000
Lake Sharpe (FIP)	102	99	95	99	1,725,000
Lewis and Clarke Lake (FIP)	92	76	91	94	477,000

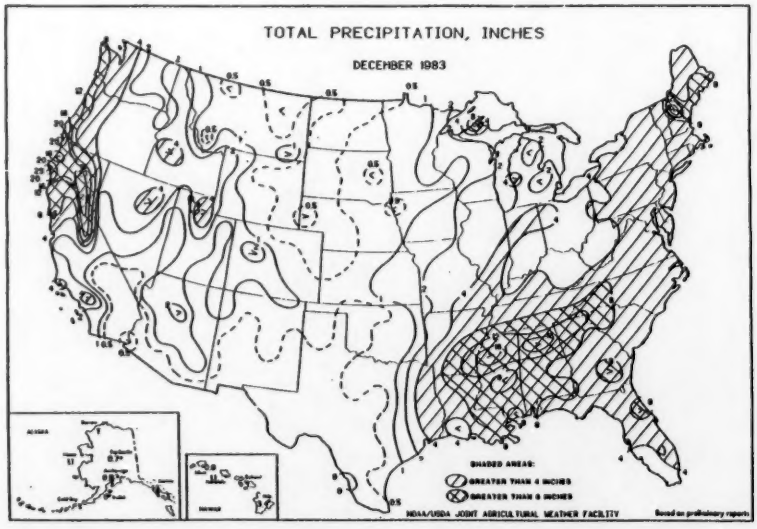
Reservoir Principal uses: F–Flood control I–Irrigation M–Municipal P–Power R–Recreation W–Industrial	Percent of normal maximum				Normal maximum (acre-feet)[a]
	End of Dec. 1983	End of Dec. 1982	Average for end of Dec.	End of Nov. 1983	
NEBRASKA					
Lake McConaughy (IP)	87	81	70	91	1,948,000
OKLAHOMA					
Eufaula (FPR)	80	89	82	82	2,378,000
Keystone (FPR)	78	80	91	85	661,000
Tenkiller Ferry (FPR)	90	106	91	88	628,200
Lake Altus (FIMR)	39	53	48	41	133,000
Lake O'The Cherokees (FPR)	87	93	79	98	1,492,000
OKLAHOMA–TEXAS					
Lake Texoma (FMPRW)	95	90	90	97	2,722,000
TEXAS					
Bridgeport (IMW)	76	87	45	77	386,400
Canyon (FMR)	88	94	75	89	385,600
International Amistad (FIMPW)	77	88	86	77	3,497,000
International Falcon (FIMPW)	46	76	79	49	2,668,000
Livingston (IMW)	101	103	84	102	1,788,000
Possum Kingdom (IMPRW)	90	88	98	82	570,200
Red Bluff (PI)	13	16	29	13	307,000
Toledo Bend (P)	91	99	82	86	4,472,000
Twin Buttes (FIM)	21	37	32	22	177,800
Lake Kemp (IMW)	102	83	84	101	268,000
Lake Meredith (FWM)	43	51	38	44	796,900
Lake Travis (FIMPRW)	79	77	78	79	1,144,000
MONTANA					
Canyon Ferry (FIMPR)	87	89	86	93	2,043,000
Fort Peck (FPR)	86	85	84	88	18,910,000
Hungry Horse (FIPR)	76	93	76	84	3,451,000
WASHINGTON					
Ross (PR)	71	84	69	86	1,052,000
Franklin D. Roosevelt Lake (IP)	88	97	95	102	5,022,000
Lake Chelan (PR)	57	54	55	73	676,100
Lake Cushman (PR)	48	47	84	68	359,500
Lake Merwin (P)	99	98	96	100	245,600
IDAHO					
Boise River (4 reservoirs) (FIP)	70	72	58	71	1,235,000
Coeur d'Alene Lake (P)	41	48	56	85	238,500
Pend Oreille Lake (FP)	58	52	50	54	1,561,000
IDAHO–WYOMING					
Upper Snake River (8 reservoirs) (MP)	51	73	62	74	4,401,000
WYOMING					
Boysen (FIP)	79	83	75	81	802,000
Buffalo Bill (IP)	78	87	68	80	421,300
Keyhole (F)	26	31	43	26	193,800
Pathfinder, Seminoe, Alcova, Kortes, Glendo, and Guernsey Reservoirs (I)	73	56	46	71	3,056,000
COLORADO					
John Martin (FIR)	24	10	13	20	364,400
Taylor Park (IR)	60	68	54	62	106,200
Colorado–Big Thompson project (I)	83	56	55	83	722,600
COLORADO RIVER STORAGE PROJECT					
Lake Powell; Flaming Gorge, Fontenelle, Navajo, and Blue Mesa Reservoirs (IFPR)	90	89	...	93	31,620,000
UTAH–IDAHO					
Bear Lake (IPR)	80	83	57	83	1,421,000
CALIFORNIA					
Folsom (FIP)	80	70	53	71	1,000,000
Hetch Hetchy (MP)	86	83	36	84	360,400
Isabella (FIR)	53	46	25	53	568,100
Pine Flat (FI)	77	66	46	75	1,001,000
Clair Engle Lake (Lewiston) (P)	87	83	72	85	2,438,000
Lake Almanor (P)	93	88	48	95	1,036,000
Lake Berryessa (FIMW)	104	96	77	92	1,600,000
Millerton Lake (FI)	83	73	54	66	503,200
Shasta Lake (FIPR)	78	78	67	79	4,377,000
CALIFORNIA–NEVADA					
Lake Tahoe (IPR)	87	83	47	95	744,600
NEVADA					
Rye Patch (I)	84	86	51	94	194,300
ARIZONA–NEVADA					
Lake Mead and Lake Mohave (FIMP)	94	92	69	94	27,970,000
ARIZONA					
San Carlos (IP)	86	14	16	87	1,073,000
Salt and Verde River system (IMPR)	82	78	39	80	2,019,100
NEW MEXICO					
Conchas (FIR)	68	73	79	68	330,100
Elephant Butte and Caballo (FIPR)	56	39	29	53	2,453,000

[a] 1 acre-foot = 0.0436 million cubic feet = 0.326 million gallons = 0.504 cubic feet per second day.
[b] Thousands of kilowatt-hours (the potential electric power that could be generated by the volume of water in storage).

USABLE CONTENTS OF SELECTED RESERVOIRS AND RESERVOIR SYSTEMS, NOVEMBER 1981 TO DECEMBER 1983

Dashed line indicates average of month-end contents. Solid line indicates current period.





(From Weekly Weather and Crop Bulletin published by National Weather Service and Department of Agriculture.)

Provisional data; subject to revision

FLOW OF LARGE RIVERS DURING DECEMBER 1983

Station number	Stream and place of determination	Drainage area (square miles)	Mean annual discharge through September 1980 (cubic feet per second)	December 1983					
				Monthly mean discharge (cubic feet per second)	Percent of median monthly discharge, 1951–80	Change in discharge from previous month (percent)	Discharge near end of month		
							Cubic feet per second	Million gallons per day	Date
01014000	St. John River below Fish River at Fort Kent, Maine	5,690	9,647	10,156	207	-10	8,000	5,200	31
01318500	Hudson River at Hadley, N.Y	1,664	2,909	7,020	283	+93	4,000	2,600	31
01357500	Mohawk River at Cohoes, N.Y	3,456	5,734	12,200	234	+265	4,000	2,600	31
01463500	Delaware River at Trenton, N.J	6,780	11,750	27,900	239	+251	16,700	10,790	31
01570500	Susquehanna River at Harrisburg, Pa	24,100	34,530	81,700	239	+386	25,000	16,200	31
01646500	Potomac River near Washington, D.C.	11,560	[1]11,490	26,800	268	+160	15,000	9,700	31
02105500	Cape Fear River at William O. Huske Lock near Tarheel, N.C.	4,810	5,005	10,000	258	+400	10,500	6,790	31
02131000	Pee Dee River at Peedee, S.C	8,830	9,851	5,890	79	+50	15,400	9,950	29
02226000	Altamaha River at Doctortown, Ga	13,600	13,880	27,190	343	+577	30,200	19,520	29
02320500	Suwannee River at Branford, Fla	7,880	6,987	6,710	209	+97	10,600	6,850	31
02358000	Apalachicola River at Chattahoochee, Fla	17,200	22,570	47,400	279	+227	47,800	30,890	31
02467000	Tombigbee River at Demopolis lock and dam near Coatopa, Ala	15,400	23,300	92,130	452	+475	113,000	73,000	31
02489500	Pearl River near Bogalusa, La	6,630	9,768	19,820	361	+249	32,200	20,810	31
03049500	Allegheny River at Natrona, Pa	11,410	[1]19,480	39,300	150	+132	33,400	21,590	21
03085000	Monongahela River at Braddock, Pa.	7,337	[1]12,510	19,990	135	+64	9,600	6,200	20
03193000	Kanawha River at Kanawha Falls, W. Va	8,367	12,590	19,800	144	+93	14,800	9,570	29
03234500	Scioto River at Higby, Ohio	5,131	4,547	8,033	198	+35	3,240	2,094	29
03294500	Ohio River at Louisville, Ky[2]	91,170	116,000	181,200	140	+77	97,000	62,700	29
03377500	Wabash River at Mount Carmel, Ill	28,635	27,220	54,600	238	+252	19,200	12,410	29
03469000	French Broad River below Douglas Dam, Tenn	4,543	6,798	11,717	179	+238	.....	.....	...
04084500	Fox River at Rapide Croche Dam, near Wrightstown, Wis[2]	6,150	4,163	4,086	114	-2	2,225	1,438	29
04264331	St. Lawrence River at Cornwall, Ontario–near Massena, N.Y[3]	299,000	242,700	264,520	111	-2	253,000	163,500	31
05011500	St. Maurice River at Grand Mere, Quebec	16,300	25,150	9,620	72	-19	16,300	10,530	28
05082500	Red River of the North at Grand Forks, N. Dak	30,100	2,551	1,988	173	-1	1,650	1,066	28
05133500	Rainy River at Manitou Rapids, Minn.	19,400	12,830	14,700	150	+7	13,700	8,850	23
05330000	Minnesota River near Jordan, Minn.	16,200	3,402	2,285	350	-5	1,700	1,100	31
05331000	Mississippi River at St. Paul, Minn	36,800	[1]10,610	10,865	224	-9	9,802	6,335	31
05365500	Chippewa River at Chippewa Falls, Wis	5,600	5,100	5,452	173	-37	4,920	3,179	30
05407000	Wisconsin River at Muscoda, Wis	10,300	8,617	11,916	184	+1	10,700	6,920	31
05446500	Rock River near Joslin, Ill	9,551	5,873	7,310	156	+49	6,200	4,010	31
05474500	Mississippi River at Keokuk, Iowa	119,000	62,620	74,300	204	-3	60,500	39,100	31
06214500	Yellowstone River at Billings, Mont	11,796	7,038	3,010	99	-42	3,350	2,165	30
06934500	Missouri River at Hermann, Mo	524,200	79,490	83,960	207	-19	35,000	22,600	29
07289000	Mississippi River at Vicksburg, Miss[4]	1,140,500	576,600	981,400	198	+137	884,000	571,300	27
07331000	Washita River near Dickson, Okla.	7,202	1,368	728	188	-60	550	355	22
08276500	Rio Grande below Taos Junction Bridge, near Taos, N. Mex	9,730	725	472	111	+61	500	320	31
09315000	Green River at Green River, Utah.	40,600	6,298	5,899	246	-4	6,400	4,140	29
11425500	Sacramento River at Verona, Calif	21,257	18,820	64,335	310	+65	78,000	50,400	28
13269000	Snake River at Weiser, Idaho	69,200	18,050	27,000	174	+6	31,500	20,360	28
13317000	Salmon River at White Bird, Idaho	13,550	11,250	6,380	138	-27	6,720	4,343	29
13342500	Clearwater River at Spalding, Idaho	9,570	15,480	5,350	84	-22	11,200	7,240	29
14105700	Columbia River at The Dalles, Oreg[5]	237,000	193,100	94,600	109	-28	174,700	112,910	29
14191000	Willamette River at Salem, Oreg.	7,280	23,510	51,500	118	+46	30,190	19,512	29
15515500	Tanana River at Nenana, Alaska.	25,600	23,460	11,129	165	-10	10,000	6,000	31
8MF005	Fraser River at Hope, British Columbia.	83,800	96,290	33,227	75	-54	205,080	132,546	31

[1] Adjusted.
[2] Records furnished by Corps of Engineers.
[3] Records furnished by Buffalo District, Corps of Engineers, through International St. Lawrence River Board of Control. Discharges shown are considered to be the same as discharge at Ogdensburg, N.Y. when adjusted for storage in Lake St. Lawrence.
[4] Records of daily discharge computed jointly by Corps of Engineers and Geological Survey.
[5] Discharge determined from information furnished by Bureau of Reclamation, Corps of Engineers, and Geological Survey.

Provisional data; subject to revision

DISSOLVED SOLIDS AND WATER TEMPERATURES FOR DECEMBER 1983 AT DOWNSTREAM SITES ON SIX LARGE RIVERS

Station number	Station name	December data of following calendar years	Stream discharge during month	Dissolved-solids concentration during month[a]		Dissolved-solids discharge during month[a]			Water temperature during month[b]		
			Mean (cfs)	Minimum (mg/L)	Maximum (mg/L)	Mean	Minimum	Maximum	Mean in°C	Minimum, in°C	Maximum, in°C
						(tons per day)					
	NORTHEAST										
01463500	Delaware River at Trenton, N.J. (Morrisville, Pa.)	1983	27,900	62	96	5,700	3,200	16,600	3.0	0	6.5
		1944–82 (Extreme yr)	12,800	65 (1949)	138 (1980)	.....	631 (1964)	20,500 (1973)	...	0	12.0
			[c]11,650								
04264331	St. Lawrence River at Cornwall, Ontario, near Massena, N.Y. median streamflow at Ogdensburg, N.Y.	1983	265,000	166	167	119,000	90,000	129,000	3.5	2.0	6.5
		1975–82 (Extreme yr)	261,700	163 (1978)	170 (1975)	118,000	88,000 (1978)	139,000 (1981)	3.0	0.5	8.0
			[c]239,200								
	SOUTHEAST										
07289000	Mississippi River at Vicksburg, Miss.	1983	981,400	182	263	559,000	379,000	654,000	7.0	0.5	11.5
		1975–82 (Extreme yr)	637,700	153 (1978)	295 (1980)	353,000	131,000 (1976)	683,000 (1982)	8.0	3.5	13.0
			[c]495,500								
	WESTERN GREAT LAKES REGION										
03612500	Ohio River at lock and dam 53, near Grand Chain, Ill. (25 miles west of Paducah, Ky.; streamflow station at Metropolis, Ill.)	1983	503,000	194	231	.....	172,000	368,000	...	0.5	11.0
		1954–82 (Extreme yr)	313,100	138 (1962)	362 (1969)	.....	21,300 (1980)	469,000 (1977)	...	0	14.0
			[c]286,000								
	MIDCONTINENT										
06934500	Missouri River at Hermann, Mo. (60 miles west of St. Louis, Mo.)	1983	*84,000	.....	.....	.....	.....	.....	...	...	...
		1975–82 (Extreme yr)	66,660	222 (1982)	770 (1978)	67,200	34,600 (1980)	237,000 (1982)	3.5	0	14.0
			[c]40,520								
	WEST										
14128910	Columbia River at Warrendale, Oreg. (streamflow station at The Dalles, Oreg.)	1983	182,000	104	120	55,200	35,300	70,500	5.5	1.5	8.5
		1975–82 (Extreme yr)	154,800	82 (1975)	119 (1978)	44,100	22,800 (1978)	77,300 (1980)	7.0	0.5	10.5
			[c]87,495								

[a]Dissolved-solids concentrations, when not analyzed directly, are calculated on basis of measurements of specific conductance.
[b]To convert °C to °F: [(1.8 X°C) + 32] = °F.
[c]Median of monthly values for 30-year reference period, water years 1951–80, for comparison with data for current month.
*Dissolved-solids and water-temperature records are not available for December.

NATIONAL WATER CONDITIONS

December 1983

Based on reports from the Canadian and U.S. Field offices; completed January 16, 1984

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EXPLANATION OF DATA

Cover map shows generalized pattern of streamflow for the month based on 18 index stream-gaging stations in Canada and 164 index stations in the United States. Alaska and Hawaii inset maps show streamflow only at the index gaging stations that are located near the points shown by the arrows.

Streamflow for the current month is compared with flow for the same month in the 30-year reference period, 1951–80. Streamflow is considered to be *below the normal range* if it is within the range of the low flows that have occurred 25 percent of the time (below the lower quartile) during the reference period. Flow is considered to be *above the normal range* if it is within the range of the high flows that have occurred 25 percent of the time (above the upper quartile). Shorter reference periods are used for the Puerto Rico index stations because of the limited records available.

Flow higher than the lower quartile but lower than the upper quartile is described as being *within the normal range*. In the National Water Conditions, the median is obtained by ranking the 30 flows for each month of the reference period in their order of magnitude; the highest flow is number 1, the lowest flow is number 30, and the average of the 15th and 16th highest flows is the median. One-half of the time you would expect the flows for the month to be below the median and one-half of the time to be above the median.

Statements about *ground-water levels* refer to conditions near the end of the month. The water level in each key observation well is compared with average level for the end of the month determined from the entire past record for that well or from a 30-year reference period, 1951–80. *Changes in ground-water levels*, unless described otherwise, are from the end of the previous month to the end of the current month.

Dissolved solids and temperature data for December are given for six stream-sampling sites that are part of the National Stream Quality Accounting Network (NASQAN). Dissolved solids are minerals dissolved in water and usually consist predominantly of silica and ions of calcium, magnesium, sodium, potassium, carbonate, bicarbonate, sulfate, chloride, and nitrate. Dissolved-solids discharge represents the total daily amount of dissolved minerals carried by the stream. Dissolved-solids *concentrations* are generally higher during periods of low streamflow, but the highest dissolved-solids *discharges* occur during periods of high streamflow because the total quantities of water, and therefore total load of dissolved minerals, are so much greater than at time of low flow.

METRIC EQUIVALENTS OF UNITS USED IN THE NATIONAL WATER CONDITIONS

1 foot = 0.3048 meter

1 acre-foot = 1,233 cubic meters

1 million cubic feet = 28,320 cubic meters

1 cubic foot per second =
0.02832 cubic meters per second =
1.699 cubic meters per minute

1 cubic foot per second · day = 2,447 cubic meters

1 mile = 1.609 kilometers

1 square mile = 259 hectares = 2.59 square kilometers

1 million gallons = 3,785 cubic meters =
3.785 million liters

1 million gallons per day = 694.4 gallons per minute =
2.629 cubic meters per minute =
3,785 cubic meters per day

(Round-number conversions, to nearest four significant figures)

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